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INTEGRATED SERVICE FOR INFORMATION RESOURCES (ISIR)

by

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INTRODUCTION

ISIR combines documentary and strategic information, document management and data base services. This service is designed to satisfy the information and documentation needs of researchers and managers at the Canadian Workplace Automation Research Centre (CWARC) by facilitating the distribution of information to these various groups.

In the course of their work, CWARC researchers and managers use and generate documentary and management information. To carry out their research and make informed decisions, all these individuals must have rapid, simultaneous and unified access to all pertinent information related to their field.

To achieve this, ISIR has developed a unique system of automated information retrieval which integrates bibliographical, factual and archival data. By presenting this integrated information resource system and using the most advanced technology to carry out its activities (data bases, optical disks, etc.), ISIR proposes an innovative concept that may serve as a prototype for other research centres.

In a second phase, ISIR intends to offer services to outside organizations in its role as a national centre for information on workplace automation.

1. INFORMATION COLLECTION AND PROCESSING

1.1 Outside information - Documentary and strategic information service

The information requirements of ISIR clients prevail when selecting and acquiring documents. The information sources chosen must meet the needs of both researchers and managers at CWARC and should reflect the interdisciplinary nature of the workplace automation field. This operation requires the ISIR manager, who is an information specialist, to keep abreast of developments in knowledge and information production in the field and also results in mechanisms whereby ISIR can become part of national and international networks for the exchange of scientific and technical information.

In addition, the national exchange program for skilled personnel in force at CWARC results in a rapid turnover of researchers, who normally remain at the Centre for only a year or two. This practice translates into a broad range of research projects undertaken at CWARC, along with the resulting wide variety of information requirements, since each new researcher has specific information needs which ISIR personnel do their best to meet effectively.

Once this information has been defined, it must be organized and analysed. Descriptive and analytical processing of documents (cataloguing and indexing) are crucial stages in ensuring that a specific document can be retrieved from among the many thousands of items.

Descriptive processing provides us with the specific identification of the document. The bibliographical description determines the formal characteristics (author, title, source, publication date, etc.) that make up the bibliographical reference.

Analytical processing plays a key role in the information processing chain, as the precision and accuracy of this stage affect the quality of information retrieval. This involves describing and characterizing the content of a document using key words or descriptors that represent the concepts contained in the document.

Concepts should be selected for their significance as elements of the information content of the document. This means finding what pertinent questions the document answers and ensuring that the appropriate notions appear in the indexing system. This system is designed to permit efficient retrieval of information available to ISIR and to provide a rapid, concise indication of the document content.

Key words or descriptors are chosen from a series of equivalent terms to provide an unambiguous representation of a notion contained in a document by controlling synonymy. This is termed a controlled vocabulary.

All the key words form a thesaurus that is the authoritative tool for indexing a new document. The thesaurus is a controlled, dynamic vocabulary of key words or descriptors governed by specific terminological rules and organized according to semantic relations. There is only one acceptable formulation for a given concept. A more or less elaborate network of relations links related elements and assigns them to broader categories. The terms can then be organized into a hierarchical structure. ISIR is currently developing a bilingual thesaurus in the field of workplace automation, since there is at this time no vocabulary control instrument available for this field, in which new terms are constantly being coined. In addition to the printed version, the thesaurus is also available as a data base.

Once these operations have been performed, the document and the information it contains are represented by a summary that can be entered into a data base. The data base management system adopted by ISIR is MINISIS (MINI-computer based Integrated Set of Information Systems). Developed by the International Development Research Centre (IDRC), this system was designed to manage text data bases on a Hewlett Packard HP3000 mini-computer.

The data base manager, with the indexing committee, is responsible for defining and creating data bases in which bibliographical summaries can be entered, stored and retrieved, as well as developing user-friendly tools (menus) so that users can easily consult data bases without having to learn complex interrogation languages.

1.2 Corporate information - Document management service

ISIR is also responsible for implementing and maintaining a system for corporate document management at CWARC. While it is clear that pertinent corporate information must be made available to managers if they are to act rapidly, it goes without saying that this will be impossible without effective and timely access to this information. The ISIR document management section was formed to handle this task.

The management information processing chain basically contains the same stages as the documentary information processing chain (descriptive and analytical processing, data base input, retrieval and distribution). There are nevertheless some significant differences. An inventory of management documents replaces the selection and acquisition of documents. Using this inventory, up-to-date reports can be made on the activities of the various administrative units of CWARC and the documents they generate, while making it possible to set up a realistic processing program. The next step is to develop a classification framework to present the document management system. Document classification is by numerical order of the call numbers assigned by the classification system.

All the work of physical document handling, application of the classification system and the development and updating of the archival data base is carried out by ISIR personnel. To regulate access and confidentiality of active documents, levels of restriction have been established and security codes are entered in the archival data base in compliance with the Security Policy of the Government of Canada. Access to confidential information is thus restricted to certain authorized groups of users.

Active documents needed for the daily conduct of CWARC activities are, however, decentralized and held in each administrative unit. Training users to consult the data base to retrieve files by subject or organization name means that the archive technician must invest time in teaching people how to use the system.

To summarize, the SIRI document management service is characterized by the physical decentralization of documents and the centralization of control. A set of standards regulates the classification, retrieval and conservation of corporate documents. The document retention schedule will be applied in accordance with the General Records Disposal Schedule of the Government of Canada published by the National Archives of Canada.

2. INFORMATION STORAGE

Once the descriptive and analytical processing is complete, the summaries representing the documents and the information they contain are integrated into the storage and retrieval process of the system. At SIRI, this storage process is made up of the various data bases developed in the MINISIS system.

2.1 Internal data bases

Summaries of the documents available at SIRI or CWARC are entered into the various internal data bases making up MINISIS. These are:

. The bibliographical data base which lists the documents making up the SIRI document collection: monographs, conference reports and periodical articles. Currently, this data base contains approximately 6,900 entries.

. The thesaurus data base, which contains the key words used for indexing documents at SIRI.

. The thematic bibliographical data bases used by CWARC researchers. The themes covered are productivity, employment and compact disks (CD-ROM). These personal data bases, which contain approximately 3,000 references, will be accessible to all once they are complete.

Archival data base which provides access to CWARC corporate information.

. A factual data base which collects information on experts, organizations and research centres related to the field of workplace automation. This data base is currently being developed and will eventually be available for consultation by all experts in the field of workplace automation who participate in the information network initiated by CWARC.

. A factual data base that lists experts working in the field of artificial intelligence in Quebec, developed in cooperation with the Quebec Communications Department.

3. INFORMATION RETRIEVAL AND DISTRIBUTION

The various data bases make up the memory on which information retrieval operations are carried out. This memory, and its corollary, information distribution, form the basis of services offered to client groups, since the main purpose of ISIR is to provide access to reliable, current information made available in the shortest possible time.

Information retrieval or search involves a series of operations intended to provide users with information in response to their questions. Retrieval is a generic term that covers searching for documents and sources as well as for the data or facts to which they provide access. All these operations are preliminary to distributing the information.

Information distribution consists in either giving users the information they need or giving them the means to access it. If users cannot be supplied with the document or information they need, the service will obtain references to documents that might be useful to the users or refer them to research organizations or specialists who may be able to obtain the desired information.

3.1 Consultation of internal data bases

Documents available at CWARC may be identified using the internal data bases. Various tools and services have been developed to facilitate access to these data bases:

- The ISIR data base consultation manual (bibliographical, archival and factual data bases).

- The ISIR data base and bibliography manual which is intended as a tool to assist researchers wishing to develop their own thematic bibliography using MINISIS. ISIR also acts as a consultant to researchers wishing to compile a bibliography and enter it in a data base on MINISIS.

CWARC thesaurus which lists the key words used for indexing ISIR documents, a first in the area of workplace automation.

. The CWARC management document classification system and a file guide giving the standards and procedures used for opening new files, identifying active and semi-active documents, etc.

. A research assistance and consultation training service has been developed along with the internal data bases on MINISIS. It should be emphasized that users may consult the bibliographical and archival data bases from their work stations.

3.2 Document distribution services

Once the document has been located, documents may be distributed in several ways:

- reference consultation at ISIR provides access to current periodicals, reference works, microfiches and optical disks.

- document loans by ISIR allow five documents to be borrowed for a period of three weeks.

- inter-library loan (ILL) is a system that enables a library that does not have a document to borrow it from another library and make it available to one of its users. This system presupposes a set of procedures (forms, borrowing conditions, document movement) being established on a national scale. ISIR processes approximately 300 ILL requests (monographs or photocopies of periodical articles) monthly. An automated ILL system has also been developed, whereby users can enter their requests on a predefined form in the CWARC electronic messaging system.

3.3 Reference service

The reference service corresponds to searches for specific strategic information or documents. These searches involve contacting experts or firms specializing in market studies (Evans Research Corporation, LINK or other information services) and consulting various reference works available in the ISIR collection (Databook, etc.).

3.4 Telereference service

Automated document searches are used both to find answers to specific questions and to carry out retrospective research. ISIR subscribes to eight data base services (BRS, CAN/OLE, Dialog, IST-Informathèque, Infoglobe, Infomart, Newsnet, DOBIS and RADAR), which provide access to over 850 commercial data bases, both bibliographical and factual. ISIR information specialists must answer questions ranging from an evaluation of the computer equipment in use in Quebec to a list of Canadian research centres and experts working in the area of natural languages and voice synthesis.

3.5 Searches in optical disk data bases

To complement its on-line data base consultation service, ISIR makes available to users commercial data bases recorded on optical storage devices (CD-ROM). This mass information storage technology (one disk is the equivalent of 250,000 pages of text) allows repeated consultation of data bases without additional on-line consultation costs. ISIR subscribes to Books in Print, CCOHS, Compact Disclosure, ERIC Ondisc, etc.

3.6 Selective Distribution of Information (SDI)

SDI is an automatic updating service through which researchers regularly receive a printed list of references corresponding to their individual research interest profile, with frequency depending on how often the commercial data bases consulted are brought up to date. The user's profile

is a research equation (structured set of key words or descriptors) that express the information he wishes to receive regularly on a given topic. Over 35 interest profiles are registered with Dialog and CAN/SDI. References retrieved using this service must generally be ordered vthrough inter-library loan.

3.7 Current information service

This service is designed to keep users abreast of recent information received or retrieved by ISIR in the fields that interest them.

Various products are related to this service:

- Flash Information

  This weekly ISIR publication provides a selective review of periodicals received by ISIR for a given week; the articles selected should deal with a field of interest to CWARC. Flash Information informs CWARC clients of the themes covered in the 300 or so periodicals to which ISIR subscribes.

- Acquisition list

  This is a monthly list of documents acquired by ISIR for the corresponding period.

- Periodical list

  This list presents the titles of periodicals (approximately 300) to which ISIR subscribes. These titles are also recorded in the ISIR bibliographical data base.

3.8 Strategic information service

This service provides access to documents that summarize and present the original information in a form that corresponds to the needs of CWARC client groups.

3.8.1 Daily information capsules

Le Devoir, La Presse, The Gazette and The Globe and Mail are scanned daily and information on current issues is retrieved from the periodicals received by ISIR.

Short abstracts of articles related to the interests of CWARC client groups are prepared and distributed through the Centre's electronic messaging service.

4. INFLUENCE OF ISIR

Expertise acquired in the Integrated Information Resources Services led to participation by the ISIR manager as a guest professor at a training seminar on modern information systems management and the use of new technologies, organized by the IDRC and UNESCO in Bamako, Mali, during the summer of 1987.

ISIR is also used as a model of an integrated system of information resources at a number of educational institutions, including the schools of library and information science at McGill University and the University of Montreal.

ISIR is thus steadily gaining recognition as an active influence in the development and distribution of knowledge in the area of workplace automation by facilitating the transfer of information and know-how so as to establish operational links between target clienteles and experts in this field.